

11/02/2005 17:39 FAX 2022937860

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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: Q78309

Yutaka TOSAKI, *et al.*

Appln. No.: 10/701,496

Group Art Unit: 1771

Confirmation No.: 7626

Examiner: Daniel R. ZIRKER

Filed: November 6, 2003

For: PRESSURE-SENSITIVE ADHESIVE TAPE OR SHEET

DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner for Patents
 P.O. Box 1450
 Alexandria, VA 22313-1450

Sir:

I, Yutaka TOSAKI, hereby declare and state:

THAT I am a citizen of Japan;

THAT I graduated from Kobe University, Faculty of Engineering, Department of Industrial Chemistry, in March of 1986;

THAT I have been employed by Nitto Denko Corporation since April of 1986, where I have been engaged, from 1986 to the present, in research and development regarding pressure-sensitive adhesive tape; and

THAT I am familiar with the prosecution of the above-identified U.S. patent application, including the non-final Office Action mailed June 21, 2005, containing a rejection of Claims 1-7 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,103,316 ("US '316").

I have conducted the following experiment to show that US '316 does not inherently disclose an amount of a component corresponding to claimed component (B) present in a surface portion of the PSA layer, i.e., in a portion of the PSA layer within the range of up to 3 nm inward from an outer face of the PSA layer, falling within the claimed range of 0.1 to 3 parts by weight

11/02/2005 17:40 FAX 2022937860

004/007

RULE 132 DECLARATION
U.S. Appln. No. 10/701,496

based on 100 parts by weight of the whole of the monomer components constituting the acrylic polymer (A) that forms the surface portion of the pressure-sensitive adhesive layer.

Examples 44 to 46 of US '316 contain the formulations shown in the following table

Material	Examples of U.S. Patent No. 6,103,316				Manufacturer	Commercial Name	Information on Physical Properties
	44A	44B	45	46			
iso-Octyl acrylate	95	95	95	95	Sartomer Chemical Co.	IOA	
n-Vinylpyrrolidone	4	4	4	4	Aldrich Chemical Co.	NVP	
Acrylic acid	1	1	1	1	Aldrich Chemical Co.	AA	
Sodium dodecyl-benzenesulfonate	0.53	0.53	0.53		Rhone-Poulenc Inc.	SIPONATE DS-10	
Sodium laurylsulfate				0.5	Henkel Inc.	TEXAPON L-100	
Poly(acrylic acid)	1	1			Rohm and Haas Corp.	ACRYSOL A3	Mw: 190
Poly(vinyl alcohol)			1	1	Air Products	VINOL 350	Mw: 108000 (Degree of Polymerization: 2455)

Of Examples 44-46 of US '316, Example 46 is the closest to the pressure-sensitive adhesive tape or sheet of Claim 1. Specifically, Example 46 uses sodium laurylsulfate, which is used as an anionic emulsifier (B) in the examples and comparative examples of the present application. Examples 44 and 45 of US '316 use substantially the same amounts of an anionic emulsifier and a hydrophilic polymer as those in Example 46, such that the amount of emulsifier

11/02/2005 17:40 FAX 2022937860

005/007

RULE 132 DECLARATION
U.S. Appln. No. 10/701,496

contained in the surface layer in Examples 44 and 45 is predicted to be substantially the same as in Example 46. Accordingly, I traced only Example 46 in the below experiment.

Results and Discussion Thereof

The ratio of sulfur element in the surface portion of the pressure-sensitive adhesive (PSA) layer within the range of up to 3 nm inward from the outer face of the PSA layer was 1.9 atomic % determined by ESCA measurement. This value falls outside the scope of present Claim 4.

Furthermore, calculation of the amount of the emulsifier in the surface portion on the basis of this sulfur element content gives 59.4 parts by weight per 100 parts by weight of the entire monomer component. This value falls outside the scope of present Claim 1.

The above results are anticipated to be due to the method of manufacturing the PSA tape in US '316, i.e., coating a monomer emulsion, and conducting simultaneously the polymerization of the monomer and the evaporation of water by EB irradiation.

In the case of emulsion polymerization as set forth in the present application, most of the emulsifier is adsorbed on the surface of polymer particles. When thereafter the water content is released during coating and drying, the emulsifier is considered to be in a hardly mobile state since it is stably adsorbed at the surface of solid particles.

On the other hand, in the method of US '316, the emulsifier is considered to be mobile since it is merely adsorbed on the surface of liquid monomer particles, and thus to be readily transferred onto the PSA adhesive tape surface during the step of water discharge proceeding simultaneously with polymerization.

11/02/2005 17:40 FAX 2022937860

006/007

RULE 132 DECLARATION
U.S. Appln. No. 10/701,496

Content of the Experiment

Materials and Formulation

Material	Formulated Amount (part)	Manufacturer	Commercial Name	Information on Physical Properties
iso-Octyl acrylate	95	Osaka Organic Chemical Industry Ltd.	IOAA	
n-Vinylpyrrolidone	4	Wako Pure Chemical Ind. Ltd.	n-Vinyl-pyrrolidone	
Acrylic acid	1	Toagosei Co., Ltd.	Acrylic acid	
Sodium laurylsulfate	0.5	Kao Corp.	Emahl 10 Ncedle	
Poly(vinyl alcohol)	1	Kishida Chemical Co. Ltd.	PVA 2000	Degree of Polymerization: 2000
Water	43.5			Distilled water

Due to temporal restriction, the materials used for the experiment were chosen from those easily available in Japan with care that the chemical structure is the same. IOAA, NVP, AA and sodium laurylsulfate are different only in the manufacturer, while the poly(vinyl alcohol) which was chosen had the closest degree of polymerization among various available products.

Formulations and Emulsification

Emulsification was conducted according to Example 1 of US '316. The emulsification condition was 8,000 rpm x 3 min in total.

Coating and EB Irradiation Conditions

Coating was conducted to give a thickness of 40 μm on a 50 μm PET film (treated with corona discharge). This thickness was chosen because, with 60 μm thickness, the coated layer became fractionally turbid and was insufficiently dried after EB irradiation.

11/02/2005 17:40 FAX 2022937860

007/007

RULE 132 DECLARATION
U.S. Appln. No. 10/701,496

EB irradiation conditions: Though in Example 46 of US '316 the voltage was 220 keV, the dose 200 kGy and the staying period 2.76 sec, the voltage of 300 keV, the dose of 200 kGy and the staying period of 1.8 sec were adopted as a result of investigating the drying conditions.

EB irradiation apparatus: EBC 300-60, made by Nissin Electric Co., Ltd.

Surface Analysis of the PSA Layer

Surface analysis by ESCA using Quantum 2000 made by ULVAC-PHI was conducted according to the measuring method set forth in the present application to derive the proportion of sulfur element by calculation. The weight proportion of the emulsifier at the surface portion was calculated from the proportion of sulfur element.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: November 7, 2005

Yutaka Tosaki
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